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(54) Method and apparatus for estimating feature values in a region of a sequence of images

(57) A method and apparatus are disclosed that estimate the brightness or other feature values of unchanging or slowly changing regions of an image in a sequence of video images even when the regions are obscured by objects over large portions of the video sequence. The apparatus and method generate a histogram for each image region position over a plurality of image frames in the sequence. The mode, or most frequently occurring value, of the image region as indicated by the histogram is selected as representing the unchanging portion of the image. The mode values of all of the regions are then assembled to form a composite image of the unchanging or slowly changing feature values. According to one method, the histogram is generated using a recursive filter. In order to process images

that exhibit some motion from frame to frame, the images in the video sequence may be aligned before generating the histogram. If the camera produces artifacts such as variations in the image caused by an automatic gain control (AGC) function, each image in the sequence of video images may be filtered either temporally or spatially before performing the histogramming operation to remove these artifacts. To reduce processing time, the image processing may be spaced in time such that only every n^{th} image is processed. Alternatively, each region of an image sequence may be processed at random irregular intervals in order to obtain the histogram. In one embodiment of the invention, the histogram is applied over relatively small groups of frames in order to generate a noise reduced image.

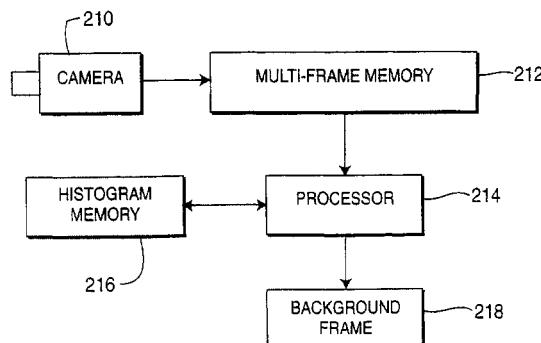


FIG. 2



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DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search	Date of completion of the search		Examiner
THE HAGUE	13 June 2001		Berbain, F
CATEGORY OF CITED DOCUMENTS			
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DOCUMENTS CONSIDERED TO BE RELEVANT			
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Place of search	Date of completion of the search		Examiner
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<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			